



The Woodlands Township Pedestrian & Bicycle Master Plan

**The Woodlands Township Board of Directors
January 27, 2016**

Project Overview



The Woodlands Pedestrian and Bicycle Master Plan will evaluate the current walking, running and bicycling network, assess gaps and needs, and explore the expansion of the existing network through project recommendations that may include more interconnected pathways, drainage/utility easement connections, and potential bike lanes.

This Plan will support integrated mobility options by providing non-motorized solutions for getting around The Woodlands Township without contributing to overall vehicular congestion.



Background



This Plan came about initially to help address four budget initiatives brought forward to the Board of Directors from the Village Associations, Board of Directors and residents. They included:

- trails in the George Mitchell Nature Preserve;
- pathway connections to Harper's Landing;
- analysis of “gaps” and/or lack of connections in the overall pathway network;
- and potential addition of bike lanes.

Peer Community Comparison



- Columbia, MD
- Irvine, CA
- Reston, VA
- Highlands Ranch, CO



Schedule

Progress thus far and where we are today:

October	November	December	January
1 st Steering Committee Meeting	Online Public Survey Release	2 nd Steering Committee Meeting	<ul style="list-style-type: none">Public MeetingBoard of Directors

- Vision
- Goals and Objectives
- Existing Conditions – exploration of gaps, opportunities, destinations, etc.
- On-street and off-street network evaluation
- Bicycle Compatibility Index (Level of Service analysis)
- Survey

Next steps:

February	March	April	May	June
			Final Steering Committee Meeting	<ul style="list-style-type: none">Ad Hoc Transp. CommitteeBoard of Directors

- Network Development
- Design/Engineering recommendations for on-street and off-street recommendations
- Metrics Development
- Prioritization of recommendations
- Proposed funding and implementation of recommendations
- Ordinance and policy creation
- Plan Development
- Plan Completion

Steering Committee



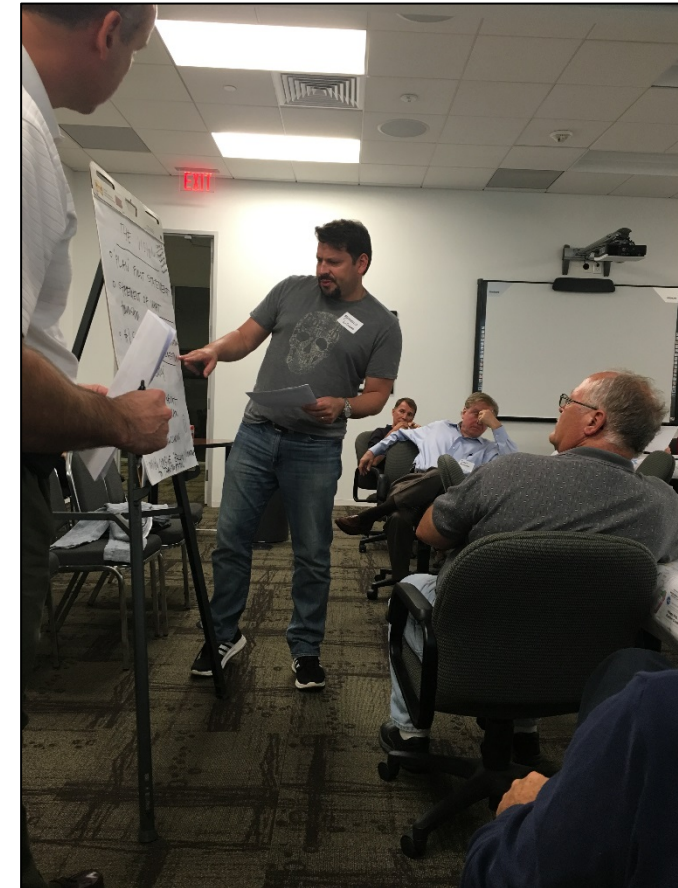
- First two meetings were held:
 - October 20, 2015
 - December 15, 2015
- Plan items addressed:
 - Vision
 - Goals and objectives
 - Gaps, Opportunities, Destinations
 - Survey
 - Level of Service for On-Street evaluation





Steering Committee Composition

Ken Schumann	Parks Advisory Council (Director's Appointment)
Maryann Braid	Parks Advisory Council (Alden Bridge)
Tom Buffa	Village of Cochran's Crossing
Marcello Lo Cicero	Parks Advisory Council (Creeside Park)
Kelly Sharer	Parks Advisory Council (Indian Springs)
Marti Meerscheidt	Parks Advisory Council (College Park)
Anthony Fasone	Parks Advisory Council (Sterling Ridge)
Dan Kolkhorst	Parks Advisory Council (TWDC); The Woodlands Development Company
George Mendes	Bicycle Advisory Task Force
Randall Cade	Bike the Woodlands Coalition
Robert Heineman	The Woodlands Development Company/Woodlands Road Utility District
Chris LaRue	Township Ad Hoc Transportation Committee
Everett Ison	Panther Creek Village Association
Rick Wong	Montgomery County Engineering Department



Vision, Goals and Objectives



VISION STATEMENT: *The Woodlands Township is a premier community that encourages walking and bicycling for all ages for everyday commuting to workplaces and schools, and for errands, fitness, and recreation. The Pedestrian and Bicycle Master Plan builds upon the interconnected pathway system as a foundation to support additional connections including trails and on-road bicycle facilities. This Plan promotes a healthy and active community, and provides safe and convenient options for getting around The Woodlands for generations to come.*

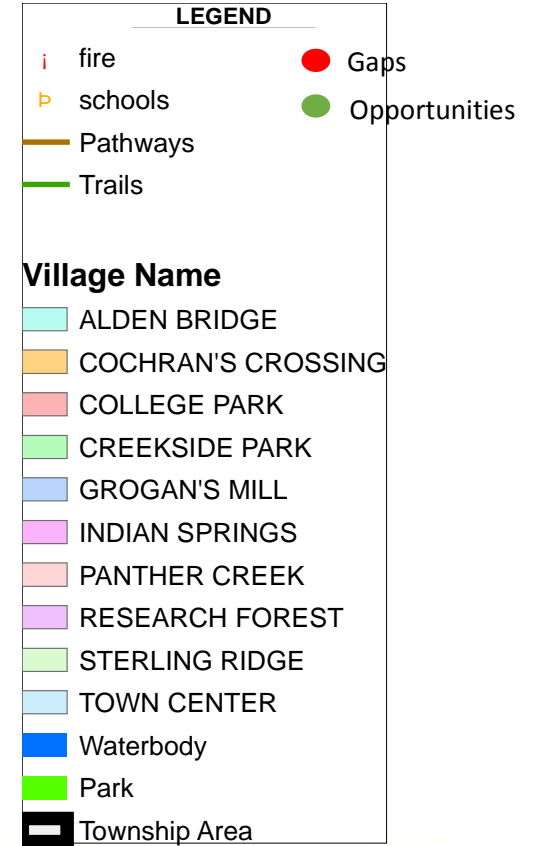
GOALS:

- Connectivity, Convenience, and Mobility
- Safety
- Funding
- Coordination
- Design



Original Goals

1. The Woodlands Township shall have a comprehensive pedestrian-bicycle master plan to guide the planning and development of a network of pathways, hike and bike trails, multi-use pathways, bike lanes and other facilities that encompasses and **interconnects** the entire Township at total build-out.
2. The Woodlands Township shall have a pedestrian-bicycle master plan that is **coordinated** with the plans of Montgomery County, Harris County, the Houston Galveston Area Council (H-GAC), The Woodlands Development Company and adjacent communities.
3. The Township's pedestrian-bicycle master plan shall have **design** standards that meets or exceeds current AASHTO and NACTO guidelines and Montgomery County, Harris County and TxDOT standards.
4. The Woodlands has Commercial Standards that require that all new developments and reconstruction projects comply with the adopted master plan and the established standards therein, and the pedestrian-bicycle master plan will meet these standards.
5. The Township's pedestrian-bicycle master plan shall identify existing and proposed infrastructure, open space and linear park corridors and utility and drainage easements, as appropriate, that can be integrated with the pedestrian-bicycle system.
6. The master plan's outcomes, strategies and recommendations shall benefit all aspects of **mobility** throughout the community and will not adversely impact automobile traffic or impede or remove existing medians in the roadways.
7. The ultimate goal of the master plan is to guide the development of a comprehensive system of off-road and on-road pathways, bike lanes, trails and other facilities that will **safely connect** users to key destinations throughout the Township, provide **connections** to all adjacent communities, provide opportunities for a wide variety of recreational activities and encourage **safe** alternative modes of transportation.



Off-Street Evaluation





On-Street Evaluation

“Bicycle Compatibility Index” (BCI): *a level of service approach*

- Tool used to evaluate capability of roadways to accommodate motorists and bicyclists
- Equation produces a number generally between 1.0 and 6.0, and is then converted to a level of service (LOS) measurement that a bicycle can expect on a roadway segment
 - LOS A = **extremely high compatibility**
 - LOS F = **extremely low compatibility**
- Determine which roadway segments are most compatible for bicyclists
- Evaluate alternative treatments to improve bicycle compatibility
- Identify weak links in the system and prioritize improvements
- Evaluate new roadways to determine their bicycle compatibility



BCI Equation

$$\begin{aligned} \text{BCI} = & 3.67 - 0.966\text{BL} - 0.125\text{BLW} - 0.152\text{CLW} + 0.002\text{CLV} + \\ & 0.0004\text{OLV} \\ & + 0.035\text{SPD} + 0.506\text{PKG} - 0.264\text{AREA} + \text{AF} \end{aligned}$$

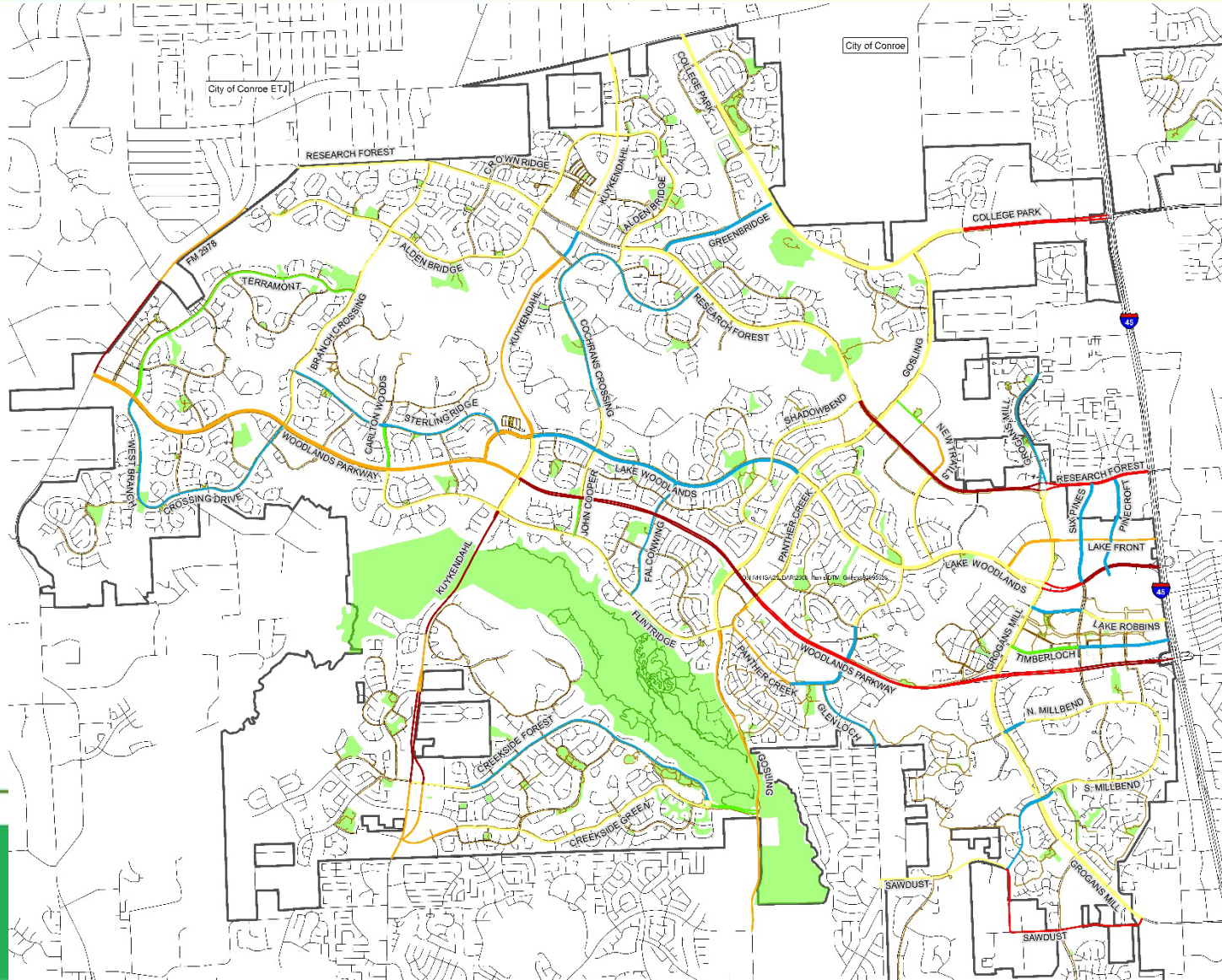
- BL = presence of a bicycle lane or paved shoulder
- BLW = bicycle lane or paved shoulder width
- CLW = curb lane width
- CLV = curb lane volume
- OLV = other lane volume
- SPD = 85th percentile speed of traffic
- PKG = presence of parking lane
- AREA = type of roadside development
- AF = Adjustment factor for truck volumes, parking turnover and right-turn lane volumes

BCI Ranges and LOS

LOS	BCI Range	Compatibility Level ¹
A	≤ 1.50	Extremely High
B	1.51 - 2.30	Very High
C	2.31 - 3.40	Moderately High
D	3.41 - 4.40	Moderately Low
E	4.41 - 5.30	Very Low
F	> 5.30	Extremely Low

- LOS C or better for casual bicyclists

BCI LOS Map



LOS A

LOS B

LOS C

LOS D

LOS E

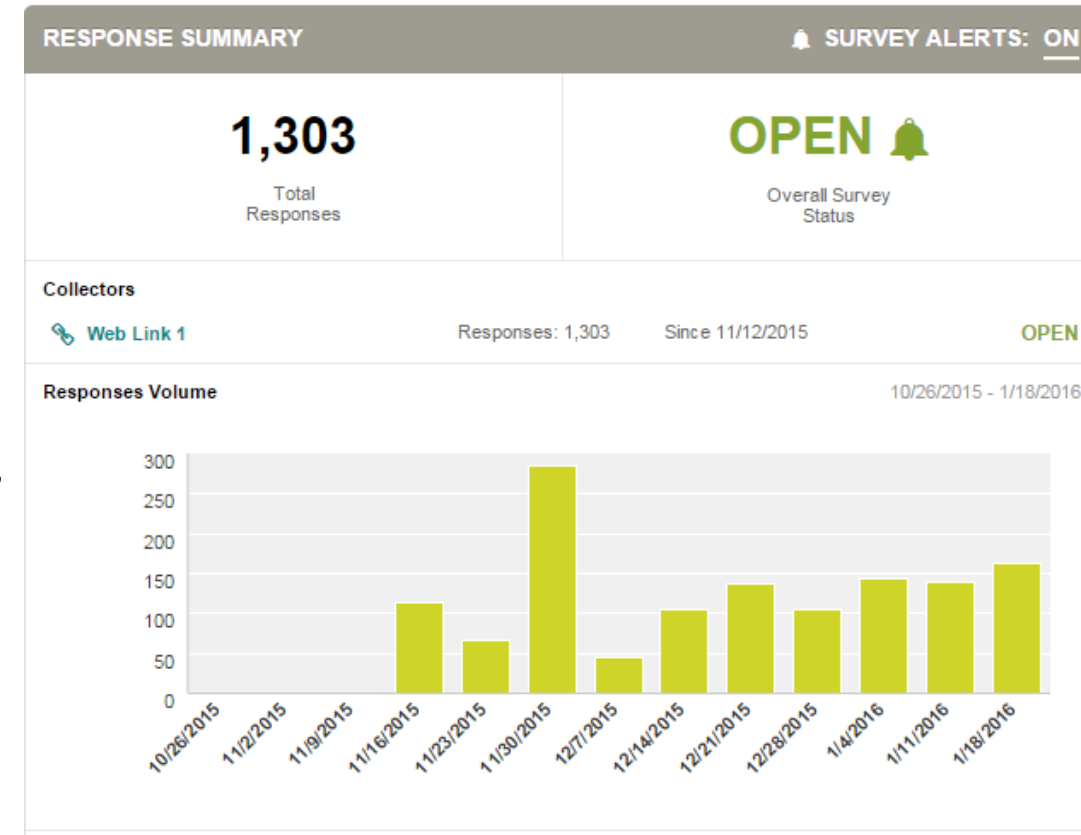
LOS F

Streets

Questionnaire/Survey



- Facts:
 - As of January 21st, total responses to the questionnaire: **1,303**
 - Polling has been open since November 20, 2015 and will remain open until January 31, 2016
 - Advertised through the “Talk of The Township” newsletter, The Woodlands Township Facebook page, Bike The Woodlands Coalition’s Facebook page, word of mouth, and advertised in The Woodlands Community Magazine this month.
 - Not every question was answered by every respondent; slides reflect who answered and who skipped each question.



Responses by Zip Code



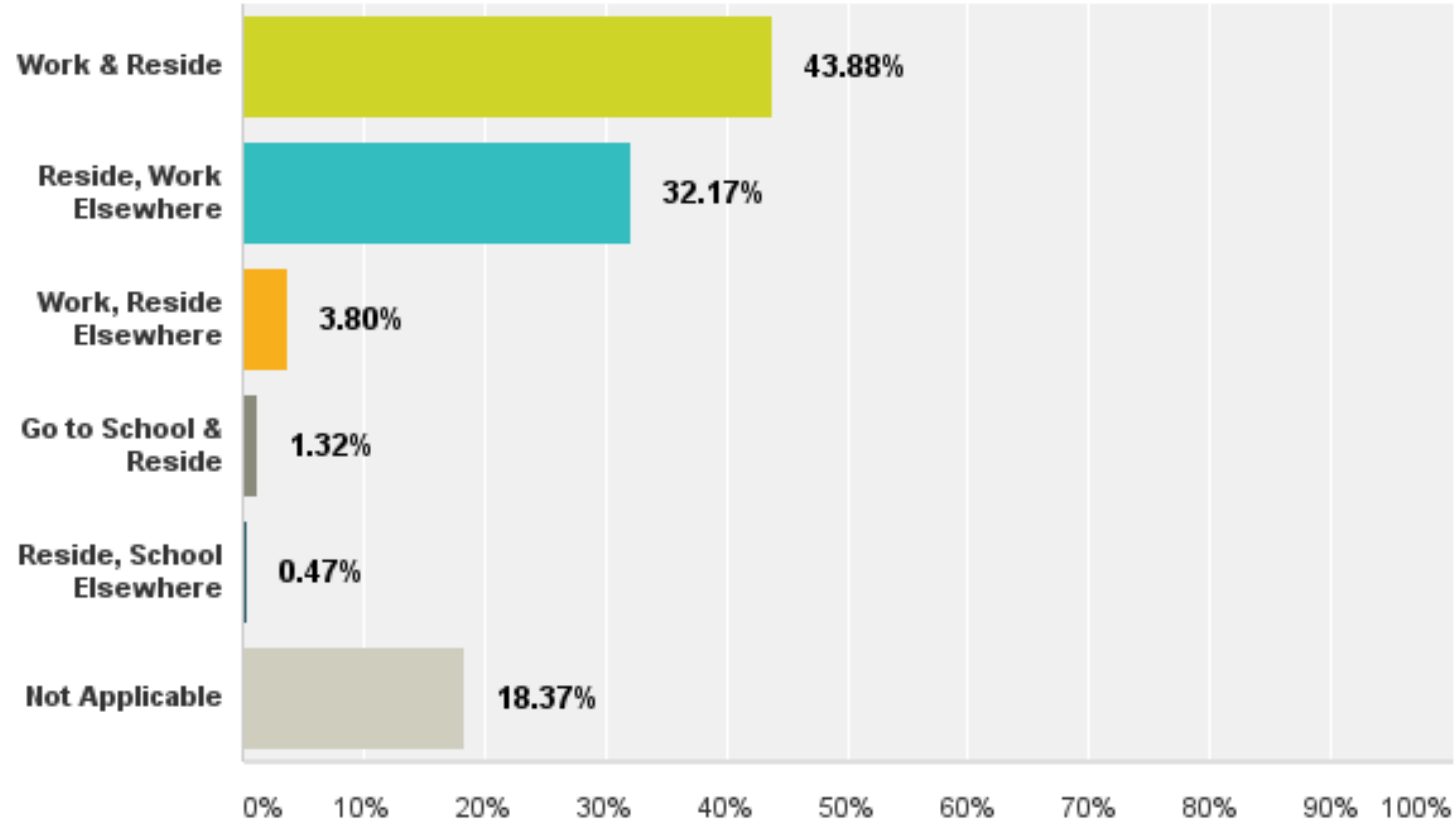
Major ZIP codes for Woodlands, TX area:		Number of Responses	Percent of Responses
77380	South/East Woodlands Zip Code	160	13.14%
77381	Central Woodlands Zip Code	361	29.64%
77382	West Woodlands Zip Code	314	25.78%
77384	College Park Area Zip Code	48	3.94%
77385	East of I-45 Zip Code	28	2.30%
77386	Small area east of I-45 towards Oak Ridge North and Spring	13	1.07%
77354	Areas near Magnolia Zip Code	18	1.48%
77375	Creekside Park Area Zip Codes	62	5.09%
77389	Creekside Park Area Zip Codes	175	14.37%
OTHER	Outlying areas	39	3.20%
	Total Responses	1218	100.00%



DEMOGRAPHICS:

Q5: Which of the following best describes your current situation?

- Answered: 1,290 Skipped: 13



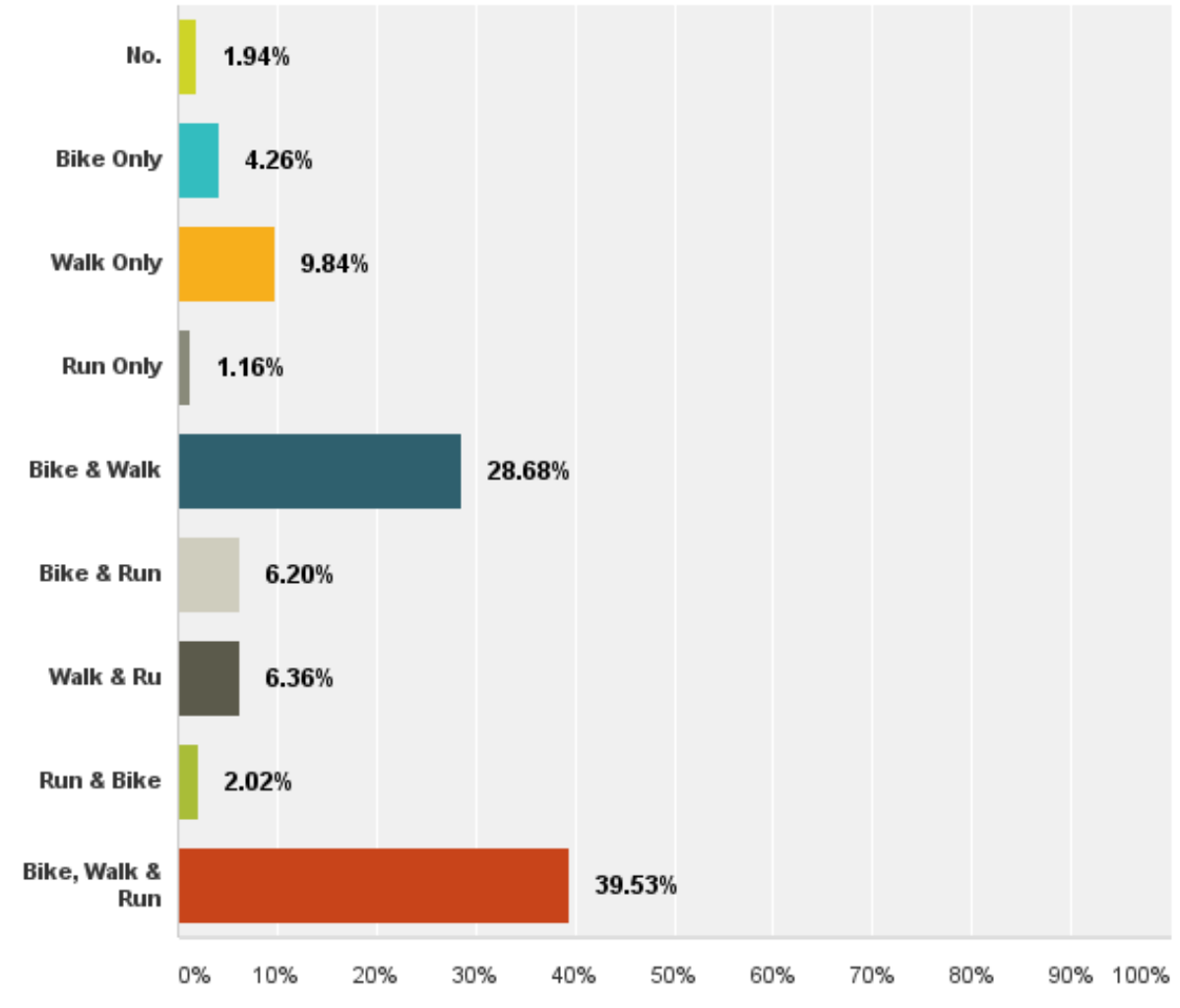
Note: The majority of "not applicable" are retired or stay home parents.



DEMOGRAPHICS:

Q6: Do you walk, run, and/or ride your bike in The Woodlands?

- Answered: 1,290 Skipped: 14

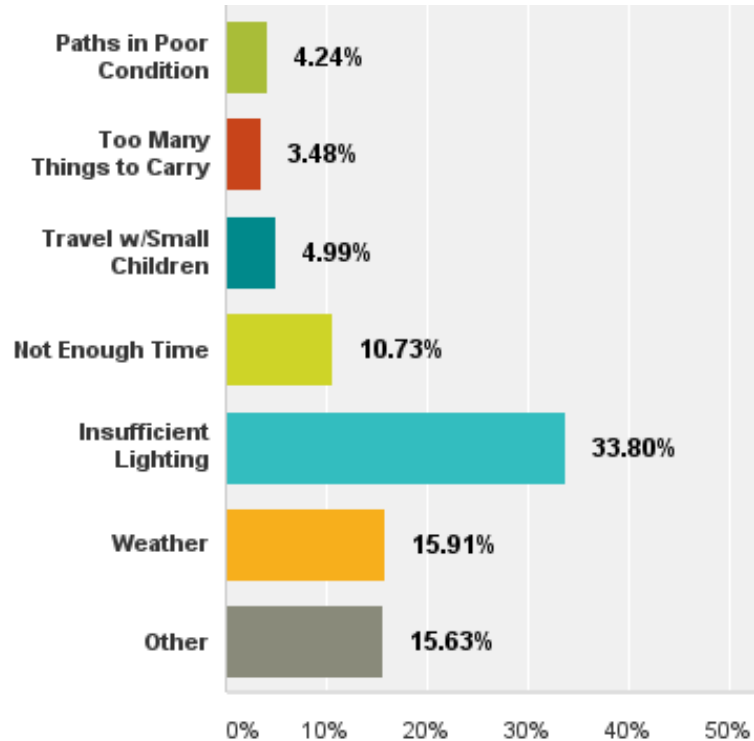
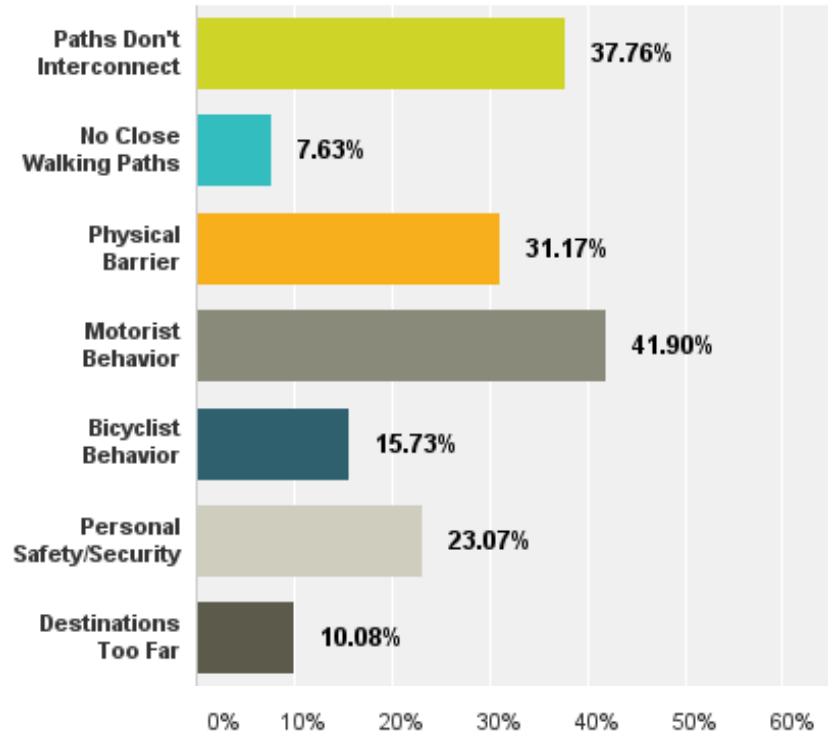


WALKING AND RUNNING QUESTIONS:

Q15: Beyond your own aspirations, what are some barriers to your ability to walk or run within The Woodlands? (Click all that apply.)



- Answered: 1,062 Skipped: 242



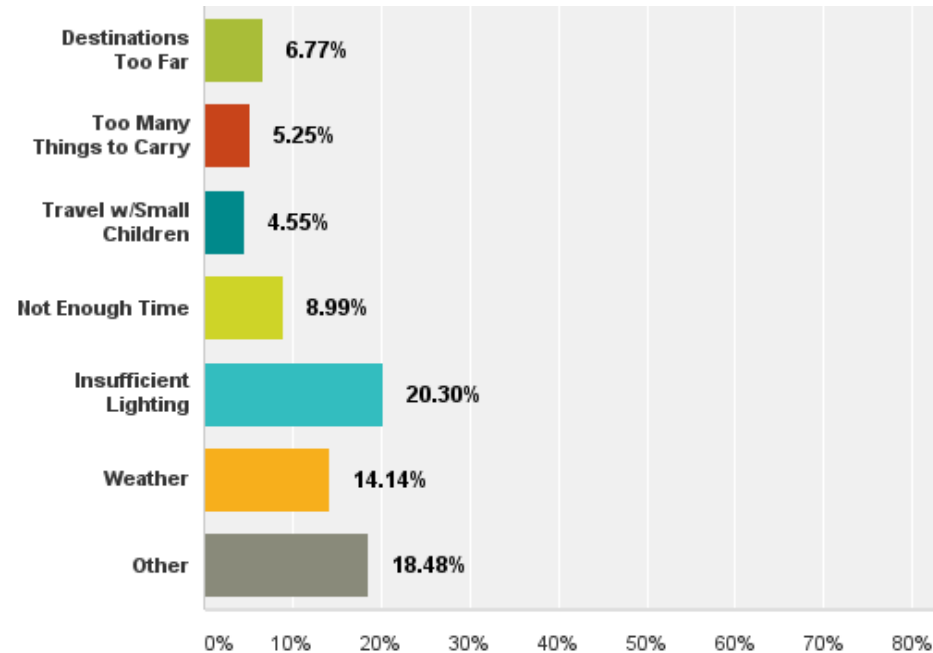
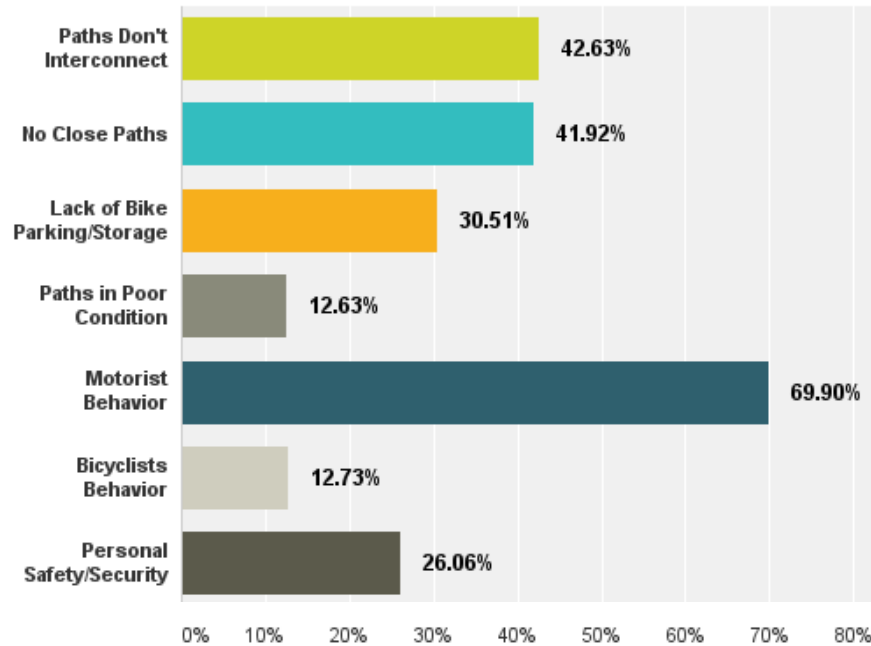
Note: Some common themes written to support “other” include:

- Insufficient lighting on pathways
- Lack of direct connections to some shopping areas
- Debris from trees on pathways (esp. after storms)
- I-45 is a barrier
- Lack of pathway along Kuykendahl
- Construction taking too long
- Safety concerns crossing busy roadways

CYCLING QUESTIONS:

Q22: Beyond your own aspirations, what are some barriers to your ability to ride a bike within The Woodlands? (Click all that apply.)

- Answered: 990 Skipped: 314



Note: For "other", the most common responses were:

- "Shoulders disappear at intersections"
- "Concern or danger of pedestrians using same pathway"
- "Lack of Shoulders"
- "Poorly Maintained Shoulders and/or Jutouts"
- "Busy Intersections"
- "Lack of End-of-trip Facilities"
- "Lack of Signage on Roadways Notifying Motorists of Crossings and Such"

GENERAL COMMENTS QUESTIONS:

Q26: Which Woodlands roadways and/or intersections seem difficult for biking, walking, and running and why?

- Answered: 554 Skipped: 750

A few common responses:

- Woodlands Parkway
- Sawdust Road (close to I-45)
- Kuykendahl
- Lake Woodlands
- Research Forest
- Alden Bridge and Research Forest
- Gosling
- Any crossings under I-45
- College Park – needing sidewalks (shoulders unsafe)
- Trade Center Parkway
- Creekside Green (needing better way to cross Strake Dr and New Harmony Trail)



Public Meeting



Public meeting was held Tuesday, January 19, 2016 at 6:00 PM

Format: Open House with at least interactive stations for the public to visit. Over 100 people in attendance.

- Station 1: Welcome and Sign-in
 - Flyers and information given
 - Comment cards for general comments received
- Station 2: Rolling Presentation
 - Progress so far on the plan and what the consultant team will be working on
- Station 3: Maps for information and comment
 - Existing pathways with destinations
 - Gaps and opportunities (as identified by Steering Committee)
 - Bicycle Compatibility Index
- Station 4: Preference Exercise – with live polling feature
- Station 5: Wayfinding Exhibit



Recommendations and Priorities



- All project recommendations will come from feedback we have heard from the steering committee, the public, Township staff and the Board of Directors
- To help prioritize project recommendations into short-term, medium-term and long-term, the team will use a criteria that may include the following elements (subject to change):
 - Barrier elimination
 - Overall system connectivity
 - Interest and support from public and officials
 - User benefit – will it impact lots of users and not just a small few?
 - Safety and comfort
 - Ease/feasibility of implementation
 - Cost

Next Steps



- Survey closes January 31, 2016
- Consultant team tasks:
 - Network Development
 - Design/Engineering recommendations for on-street and off-street recommendations
 - Metrics development
 - Completion of existing conditions report
 - Prioritization of recommendations
 - Proposed funding and implementation of recommendations
 - Ordinance and policy creation
 - Plan Development
 - Plan Approvals and Completion
- www.thewoodlandstownship-tx.gov/ped-bike-plan